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Abstract

Background: Nurse-patient communication is of the utmost importance to oncology patients.

Objective: To investigate the factors influencing the level of satisfaction with nurse-patient communication among oncology patients during their daily routine procedures.

Methods: In this observational study, 25 registered nurses and 94 patients were recruited from an oncology unit. The patients were asked to complete a concern checklist before and after each admission, administration of medication, and wound-dressing procedure. Nonverbal cues expressed by the nurses and patients were noted on the checklist during these nursing procedures.

Results: The results showed that patients at stage 3 cancer and patients receiving admission procedures were significantly more satisfied with their communication with nurses than those who were more concerned about the impact of the disease on self-care.

Conclusions: Cancer stage, time of admission and psychological concern related to self-care ability are the potential factors affecting the satisfaction level of nurse-patient communication.

Implications for Nursing: Emphasis could be placed on utilizing the time of admission to interact with patients in a busy environment to strive for better communication with oncology patients. The results underscore the importance of applying the self-care enhancement approach for hospitalized cancer patients.

Key words: cancer, patient satisfaction, nurse-patient communication

Background

Effective communication between health professionals and patients has been associated with positive health outcomes in patients, including satisfaction, compliance with recommended treatments, and accurate diagnoses[1]. For nurses, nurse-patient communication plays a major role in daily nursing routines, as the ability to connect well with patients helps nurses to assess and understand the patients' health conditions, concerns, and treatment decisions. In the case of oncology patients, who must often undergo long-term treatments that exhaust patients both physically and mentally, nurses are known to be their most important resource, providing them with both medical and emotional support[2]. Thus, it is particularly important that nurses and patients are able to communicate well with each other. The focus of many studies on nurse-patient communication has been on the influence of verbal cues, such as distancing, acknowledgement, and ignoring between nurses and cancer patients[3-6]. Little research has been conducted on the influence of patients' physical and psychological concerns and nonverbal cues on satisfaction with nurse-patient communication reported by oncology patients.

Patients' concerns and nonverbal cues

Cancer patients commonly have concerns about their treatments and progress that differ by disease stage and treatment phase. The verbal and nonverbal communication that takes place between nurses and patients during daily routine nursing care provides opportunities for nurses and patients to interact as a dyad, which helps patients to vent their concerns and needs while receiving physical comfort and psychological support from nurses [7, 8]. If these concerns are not acknowledged and dealt with, patients could become anxious or depressed, and dissatisfied with their nursing care[4, 9, 10]. Patient suffering from anxiety and depression could affect their ability to

function normally, delay their rehabilitation, and adversely affect their quality of life[2, 3, 6]. A systematic review of nurse-patient interaction and communication[11]concluded that the involvement of patients in communication process has thus far been neglected in the literature[10, 12]. Studies involving both nurses and patients conducted to understand the experience of patients in this dyadic interaction are limited[13].

Factors influencing effective nurse-patient communication

Certain domains of cancer patients' attributes (e.g., emotions), healthcare professionals' attributes (e.g., attitude), and external factors (e.g., time constraints) are barriers to effective nurse-patient communication[14]. Inconsistent acknowledgements or inadequate responses by nurses to the patients' cues and concerns for information, or to the patients' psychosocial concerns, have been reported as hindrances to effective nurse-cancer patient communication[15, 16]. Patients' regard for their healthcare providers as higher authorities that had an important role in their cure and care, contributed to their inclination to follow instructions and to take a passive attitude toward the raising of questions[14]. Familiarity with the healthcare professionals who were caring for them or having a rapport with them contributed to greater patient ease with raising questions or their concerns[17, 18]. Moreover, patients' perceptions of the emotions or attitudes of the nurses appear to influence the building of rapport and their readiness to express their feelings and needs[18, 19]. Because the results of studies conducted in Western countries on the factors influencing nurse-patient communication might not be applicable to Hong Kong because of cultural differences, there is a need to consider the local culture when studying the communication that takes place between health professionals and patients[20].

Nurse-patient communication in an oncology center

In Hong Kong, the understaffing of nurses is a critical problem[21]. Studies have identified that the pressure of time and heavy workloads are factors that prevents patients from disclosing their needs and concerns and expressing negative emotions[8, 22]. Time constraints also force nurses to engage in only very brief verbal communication with patients in their daily interactions [23]. Under such circumstances, it is crucial for both nurses and patients to notice the nonverbal communication cues that the other sends out. Nonverbal communication is all communication produced by means other than words[24] including eye contact, body posture, smiling, and accepting and giving praise[25].

It is a common practice for Hong Kong nurses to wear a facemask when performing clinical duties, which may cause patients to misinterpret the facial expressions of the nurses. According to a study conducted by Hillen et al. in 2015, the successful deciphering of nonverbal cues, particularly those relating to eye contact, could lead to enhanced trust between health professionals and cancer patients[26]. By contrast, ignoring nonverbal cues might hinder the delivery of the physical and/or psychological care required by patients[27, 28].

A large survey on the level of satisfaction with the communication between healthcare providers and patients was conducted in 2015 in 25 Hong Kong public hospitals. The findings suggest a need to ensure effective communication between healthcare providers and patients, so that the latter better understand and appreciate the information that is provided to them and, consequently, become less anxious[29].

Methods

Aim and Objectives

The aim of this study was to identify the factors affecting patients' satisfaction with nurse-patient communication. The study objectives were to:

1. Investigate the oncology patients' level of satisfaction with nurse-patient communication during admission, the administration of medications (AOM), and wound dressing procedures.
2. Identify and assess factors that potentially influence oncology patients' satisfaction with nurse-patient communication. These factors include nurse and patient socio-demographics, cancer status, patients' physical and psychological concerns, and the nonverbal communication cues expressed by nurses and patients.

The model used to guide this study is based on the work of de Haes and Bensing on medical communication[30]. In this model, patient-related health outcomes are the primary goal of medical communication. The providers' communication is to be patient-centred, with immediate, intermediate, and long-term care outcomes. The immediate outcome for a nurse of responding to the emotions and informational needs of oncology patients (which might be expressed verbally or non-verbally), would be to send out verbal (e.g., exploratory skills) and nonverbal (facial expressions, etc.) communication cues. The intermediate and long-term outcomes for the patient include a sense of informational support, adapted emotion, a reduced level of concern, and satisfaction. The inability of nurses to identify a patient's verbal or nonverbal communication cues (immediate outcome) may lead to the patient feeling ignored and contribute to nurse-patient conflict (intermediate outcome)[17]. Hence, the quality of a nurse's communication cues is instrumental to achieving desired patient-related health outcomes (e.g., the patient's physical and psychosocial levels of concern) that, at the same time, directly affect the patient's level of satisfaction with nurse-patient communication.

Research Design

This observational study was conducted in an oncology unit comprised of one male ward and one female ward of a regional hospital. Data on the patients' physical and psychological concerns and the nonverbal communication cues adopted by nurses and patients before and after each nursing procedure were collected. Hospital admissions, the AOM, and wound-dressing procedures were the nursing procedures chosen for inclusion in this study because they were the most common routine procedures in the study unit. The patients' level of satisfaction was then measured after each nursing procedure to identify whether there was any association between level of satisfaction and level of concern, and the use of nonverbal communication cues.

Sample and Setting

For a multiple regression study with five predictors, a sample of 90 patients would provide an effect size of 0.15 and a statistical power level of 0.80 at the 95% level of confidence[31]. A trained research assistant with a background in nursing approached and invited nurses and patients in the two oncology wards to participate in the study. The purpose and procedures of the study were explained to them. A purposive sample of 27 registered nurses working day or night shifts was recruited from the two wards. The patient sample consisted of patients admitted to the wards for which these nurses were responsible. The criterion for selecting the nurses was that they have at least one year of work experience in the current oncology unit to ensure that the nurses would have a working knowledge of the culture of the unit. Two nurses withdrew, one resigning and another refusing to continue due to the heavy clinical workloads, thus 25 nurses participated. The inclusion criteria for patients were: 1) at least 18 years of age, 2) able to communicate in Cantonese, and in reasonable health to be interviewed during hospitalization. Patients with a tracheotomy or receiving end-of-life care were excluded. Nurses alerted the research assistant to

any patients with a cancer condition not suitable for study participation. Of the 102 patients recruited, eight withdrew, leaving 94 patients participating. The withdrawals included six that were discharged without having had a procedure, one participant died, and one was found physically unsuitable for the study. The final sample was comprised of 47 female and 47 male participants.

Ethical Considerations

This study was approved by the Human Research and Ethics Committees of the Hong Kong Polytechnic University and the Hospital Authority. All participants gave informed written consent for study participation and provided their demographic data before the interview. Information sheets with a verbal explanation of the study were handed out at recruitment. Both nurses and patients were given assurances of confidentiality and anonymity, informed of their right to withdraw from the study at any time, and informed that their refusal to participate would have no effect on their care (patients) or employment (nurses).

Data Collection

With the help of a trained research assistant (RA), the patient participants were asked to complete a checklist of their physical and psychosocial concerns using a scale of 0-10 before and after each admission, AOM, and wound-dressing procedure (0: not concerned at all, 1: the least concerned, 10: the most concerned). Nonverbal communication cues used by nurses and patients were recorded concurrently in the checklist by the RA during these three nursing procedures. The patients' level of satisfaction with the communication was collected after each admission, AOM, and wound-dressing procedure by having them give a score in the range of 1 – 5 (1: Very

unsatisfied; 5: Very satisfied). Some patients were involved in more than one of the nursing procedures being studied; therefore, they responded to the satisfaction with communication question more than once.

Instruments

The following questionnaires in Chinese were used: a demographic sheet, a patients' concerns checklist, a checklist of nonverbal communication cues used by nurses and patients, and a Likert scale on the patients' level of satisfaction with the nurse-patient communication.

Socio-demographic characteristics of nurses and patients

An individual demographic sheet was used to collect socio-demographic data on the nurse participants, including their age, gender, education, and work experiences, while the patients' age, gender, education, disease history, and current treatments were retrieved from their medical records and in the interviews.

Checklist of Patients' Concerns

The Checklist of Patient Concerns including 32 items was used in this study. It was originally developed by Devlen in 1987[32], revised by Uitterhoeve[24], and has been assessed as a valid and reliable method for identifying the concerns of cancer patients[33, 34]. Prior to the procedure, the trained RA asked the patients about their concerns, such as their need for information about their illness, their physical complaints, emotional and social needs, and about whether they had received any support to deal with the impact of their disease; all of the questions were answered with a yes or no. The patients were then asked to prioritize their concerns on a scale of 0 to 10 (0:

no concern at all; 1: the item of least concern; 10: the item of most concern). There was also a final question about any other concern that had not yet been mentioned. After the routine procedures, the RA went through the patient checklist again with the patients to determine whether there were any differences in concern since they had last communicated with the nurse.

Checklist of Patients' and Nurses' Nonverbal Communication Cues

As video recordings are not generally acceptable to patients or institutional administrators in Hong Kong, a checklist was used to capture the nonverbal communication cues used by the nurse and patient participants during nurse-patient interactions in each nursing procedure. This checklist was based on the nonverbal items and definitions developed by Rios Castillo and Sanchez-Sosa[25] and on Nilsen's revised version[35]. It was used in a critical care setting. Observations were made of the positive and negative behaviors of the nurses and patients during their interactions. The nonverbal behavioral items included visual contact, proximity, physical contact, brief contact, smiling, laughing, sharing, modelling, acceptance, following instructions, requests, praise, maintaining attention, ignoring, disagreement, and disgust. The checklist of nonverbal communication has shown good validity and sufficient inter-observer reliability in both nurse and ventilated patient behaviors, with agreement for individual items of over 68%[35]. The nonverbal communication cues of this checklist was reviewed by a panel of two academic experts, and oncology nurse consultant and a research fellow who were knowledgeable about nurse-patient communication in an oncology setting. The panel came to a consensus that the checklist was appropriate and able to provide adequate information regarding nurse-patient nonverbal communication cues in this study.

Patients' satisfaction level

The patients' level of satisfaction with their communication with nurses was measured after each admission, AOM, and wound dressing procedure. Immediately after the completion of the procedure, each patient was asked to rate his/her communication with the nurses during the procedure. A Likert scale ranging from 1-5, with 1 indicating 'very unsatisfied' and 5 representing 'very satisfied', was developed by the research team and used in this study.

Statistical Analysis

Statistical analyses were performed using SPSS (version 24). Descriptive statistics were reported by percentage or mean ± standard deviation (SD), as appropriate. Kruskal-Wallis tests were used to assess the relationships between the socio-demographic characteristics of the patients and nurses, the patients' cancer conditions, and the patients' satisfaction with their communication with the nurses during routine care. Chi-square tests were performed to compare the nurses' characteristics with their use of nonverbal cues. Mann-Whitney tests were conducted to assess the differences in satisfaction with nurse-patient communication when nonverbal cues were used and when they were not. The overall levels of concern were calculated by summing the levels of concern of all individual physical and psychosocial items. Spearman's correlations were used to analyse the relationship between the level of concern with each physical and psychosocial item and satisfaction with nurse-patient communication. A Linear Rank Regression model was used to identify factors that contributed to the patients' satisfaction with nurse-patient communication during routine care, controlled for sex and age. A P value of $<.05$ was considered statistically significant.

Results

Ninety-four oncology patients participated in this study (**Table 1**). Half of them (50.0%) were male. The mean age was 61.61years ± 11.16. A majority were married or living with a partner (70.2%), and had no formal education or only a primary education (53.2%). Approximately 79% had localized cancer and 87% had been diagnosed with cancer for the first time. The mean duration of their cancer disease was 14.28 months ± 15.36. More than half were at stage 4 (53.2%) and had been previously admitted to the same oncology ward (52.1%). Among these 94 patients, 60 patients were involved in one nursing procedure being studied. The remaining 28 patients and six patients were involved in two and three nursing procedures being studied respectively.

Twenty-five nurses, consisting of four males (16.0%) and 21 females (84.0%), participated in this study (**Table 2**). Most (48.0%) were 30 - 40 years old, while 40.0% were less than 30 years old. Twenty-four nurses (96%) had completed a bachelor's or master's degree in nursing. Of these nurses, three had also obtained a certificate in palliative or oncology nursing. Forty-four per cent had been working in an oncology specialty and in the oncology wards involved in the study for more than five years.

During the 7-month study period, we studied 134 instances of routine care, 70.1% (n=94) of which involved the AOM. Others involved patient admissions (n=8, 6.0%), wound-dressing procedures (n=8, 6.0%), and discharge procedures (n=24, 17.9%). Patients rated their satisfaction with patient-nurse communication in 105 of the 110 admission, AOM, and wound dressing procedures. The mean satisfaction score was 4.20 (SD=0.86), indicating that the patients were generally satisfied with their communication with the nurses during the routine care.

Socio-demographic Characteristics and Cancer Conditions

No significant relationship was found between the socio-demographic characteristics of the patients and nurses and satisfaction with communication during the 105 procedures. In regard to cancer conditions, patients with stage 3 cancer were more satisfied with nurse-patient communication compared with patients with stage 2 and stage 4 cancer. (X^2=10.71, P=.005). Patients involved in admission procedures were also more satisfied with their communication with nurses compared with patients received AOM and discharge procedures (X^2=7.19, P=.027) **(Table 3)**.

Physical and Psychosocial Concerns

T-tests were performed to assess differences in the level of concern for each item of concern before and after the routine care; however, no significant changes were observed. Pain (n=30), disease treatment (n=21), weight loss (n=18), finances (n=18), and emotion and the role of family (n=15) were mentioned most frequently by the patients before routine care **(Table 4).** The five physical conditions about which the highest levels of concern were expressed were infection (8.00 ± 0), disease (7.70 ± 2.21), pain (7.00 ± 2.32), disease treatment (6.90 ± 2.10), and nausea and vomiting (6.42 ± 1.93). The psychosocial problems that were given the highest ratings for concern were professional support needed in the future (9.75 ± 0.50), appearance (8.00 ± 0), future (7.70 ± 1.64), self-care (7.55 ± 2.77), and social life (7.50 ± 0.71).

Patients who were more worried about their cancer disease (ϒ=-0.246, P=.011), the future professional support that they might need (ϒ=-0.206, P=0.035), and self-care (ϒ=-0.192, P=.049) had a significantly lower level of satisfaction with nurse-patient communication (**Table 7**). Patients who were more worried about their psychosocial condition prior to nurse-patient

communication (ϒ=-0.201, P=.042), and those who were more worried about their overall physical and psychosocial conditions and problems before (ϒ=-0.207, P=.036) and after the communication (ϒ=-0.221, P=.025) were significantly less satisfied with the communication with nurses during the routine care.

Nonverbal Cues

Among the 110 items of routine care, the two most common positive nonverbal cues that nurses used during routine care were visual contact (80.2%) and proximity (75.2%), while physical contact (3.0%) and modelling (4.0%) were rarely observed (**Table 5**). For patients, visual contact (82.2%) and maintaining attention (63.4%) were the two most common positive nonverbal cues that patients used. Physical contact was not seen in patients. Negative nonverbal cues that were rarely seen in nurses included ignoring, while in patients they included ignoring, disagreement, and disgust. No significant differences in patient satisfaction were noted when particular nonverbal cues were used or not used, and there was no significant relationship between the number of positive nonverbal cues that nurses and patients used and their satisfaction with communication.

Male nurses used the sharing cue significantly more often than female nurses did during routine care (P=.010). Nurses with a bachelor's or a master's degree in nursing as well as a certificate in palliative or oncology nursing smiled significantly more often than those with a bachelor's or a master's degree in nursing only (P=.001). No significant relationship was found in other nonverbal cues **(Table 6)**.

Potential Factors Determining Satisfaction with Nurse-patient Communication

Patient participants with stage 3 cancer (β(95%CI) = 0.30 (6.27 – 30.88), P=.004) and those who were observed for the admission procedures (β(95%CI) = 0.31 (1.70 – 59.35), P=.038) were significantly more satisfied with their communication with nurses. Those who were more concerned about the impact of the disease on self-care (β(95%CI) = -0.29 (-5.96 - -0.13), P=.041) were less satisfied with their communication with nurses (**Table 7**).

Discussion

Our study findings support the view that nurse-patient communication has an impact on the level of satisfaction (patient-related health outcome) during the delivery of nursing care. From our findings, we identified three factors that affected the satisfaction of cancer patients with nurse-patient communication. Patients at stage 3 cancer and patients involving in admission procedures were significantly more satisfied with their communication with nurses. Those who were more concerned about the impact of the disease on self-care were less satisfied with their communication with nurses.

The Use of Time in Admission Procedure

Making use of admission time is a possible solution to achieving the nursing goal of balanced care within the available timeframe. In Hong Kong, the nurse-patient ratio in a ward is around 1:11, whereas the international standard is 1:4-6[21]. It would not be possible to create more time within a very busy cancer care environment[36].

In this study, patients who were observed to receive admission procedures reported more satisfaction with nurse-patient communication. It may be that the admission time provides a longer contact time for nurse-patient dyads to engage in such activities as asking and answering

questions and familiarizing themselves with the environment and nursing routine, which may have facilitated their future communication and partnership. More emphasis could be placed on the use of the admission time to identify any physical and psychological needs and concerns that oncology patients might have. It would be helpful for nurses to listen to and understand the views of patients in order to bridge the gap between the patients' expectations and the nurses' priority in providing the nursing care they think the patients needed [8]. Becoming familiar with the nurses having a rapport with them before also made it easier for patients to raise questions or discuss concerns in future interactions[17 18].

Self-Enhancement Program for Holistic Patient Services

Although there is much evidence from around the world of the need to improve psychosocial care for cancer patients, gaps and barriers to its delivery still exist[36, 37]. In our study, it was noted that cancer patients had psychological concerns about their ability to engage in self-care. This differed from Dilworth et al.'s[33] finding that the barrier most frequently reported by cancer patients was their view that they had no need for psychosocial services and support[36]. The dissimilarity in the results may be due to the influence of culture. Chinese older people are more reticent than Westerners about their psychosocial needs, and would take a passive role in expressing their own ideas or feelings[38] about their own treatment plans in front of health professionals who are thought by the public to be authoritative figures[14]. Thus, the psychosocial needs of patients may be only partially met or may even go unmet during hospitalization as a result of understaffing, busyness on the part of the nurses, or cultural influences[8]. To solve the concerns that patients might have about their self-care ability, a self-enhancement program that includes muscle training to reduce fatigue, modifications of activities of daily living,

communication skills with health professionals, and so on, should be organized for cancer patients during and after hospitalization.

The finding of this study also found that patient with stage 3 cancer reported more satisfaction on nurse-patient communication than those patients with another cancer stage. However, there was limited research done to investigate the association between cancer stage and nurse-patient communication. The authors are unable to explain this finding. Further research may need to enhance nurses' understanding in this important area.

Nursing Education on Healthcare Communication

In Hong Kong, nurses are required by hospitals to wear a facemask in clinical areas. The influence of the wearing of facemasks as well as limited physical spaces for nurse-patient interaction should be considered when nurses communicate with patients. It might contribute to the lack of influence from nonverbal cues (physical contact, smiles, etc.) on the patients' level of satisfaction with nurse-patient communication. Of noted, there is no regular training on verbal or nonverbal communication provided in local nursing education or post-registration professional training programs. Nurses need to be educated to notice patients' nonverbal communication cues and on how to improve their receptivity to patient cues[2]. Ongoing professional training may help nurses to further improve their communication skills.

Limitations

The socio-demographic characteristics of the patients and nurses from one hospital who volunteered to participate in this study might be different from those of nurses and patients in other hospitals. This study did not control for the patients' stage of cancer, which would have

affected the level of their physical and psychosocial concerns. Finally, this study was not a randomized, double-blinded, controlled trial.

Implications for Nursing

The problem of the understaffing of nurses is particularly acute in Hong Kong. It affects the amount of time that can be spent in nurse-patient communication. The time of admission was reported to be an appropriate opportunity for nurses to achieve better communication with oncology patients. More emphasis could be placed on the utilization of good opportunities to interact with patients within a busy environment. The results suggest that a psychological approach to treatment integrated with self-care enhancement should be applied comprehensively to hospitalized cancer patients, and that such an approach should be matched with the patients' disease stage and clinical circumstances.

Conclusion

The present study is to investigate factors affecting the level of satisfaction felt by cancer patients with nurse-patient communication during their daily routine procedures. This study revealed that stage 3 cancer, nursing admission procedures, and psychological concern over the impact of the disease on one's self-care ability are the factors that potentially influence the level of satisfaction with nurse-patient communication among cancer patients in Hong Kong. The level of satisfaction with nurse-patient communication can improve with adequate communication between nurses and patients, which will further facilitate their communication and partnership in future nursing interventions.

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Table 1. Socio-demographics and Cancer Status of The Oncology Patients (N = 94)

	N (%)
Sex	
Male	47 (50.0%)
Female	47 (50.0%)
Age (years)	
≤ 50	15 (16.0%)
51 – 60	27 (28.7%)
61 – 70	29 (30.9%)
≥ 71	23 (24.5%)
Marital status	
Single	8 (8.5%)
Married / Lived with partners	66 (70.2%)
Divorced	16 (17.0%)
Widowed	4 (4.3%)
Education	
No formal education / Primary school	50 (53.2%)
Secondary School	40 (42.6%)
University or above	4 (4.3%)
Employment status	
Employed	9 (9.6%)
Unemployed	30 (31.9%)
Retired	55 (58.5%)
Cancer types	
Localized	74 (78.7%)
Colorectal	9
Leukemia	1
Skin	1
Lung	27
Cervical	1
Stomach	7
Breast	10
Liver	2
Nasopharynx	4
Ovary	4
Others	8
2 Sites	18 (19.1%)
3 Sites	2 (2.1%)
First Time /Recurrence	
First time diagnosis	82 (87.2%)
Recurrence	11 (11.7%)
Missing	*1*
Disease duration (months)	14.28 ± 15.36
Stage of illness	
Stage 0	0
Stage 1	0
Stage 2	8 (8.5%)
Stage 3	21 (22.3%)
Stage 4	50 (53.2%)
Undefined	15 (16.0%)
Cancer treatment	
None	13 (13.8%)
Surgery only	1 (1.1%)
Chemo only	34 (36.2%)
Electro only	14 (14.9%)
Others only	13 (13.8%)
Surgery & Chemo	1 (1.1%)
Surgery & Others	1 (1.1%)
Chemo & Electro	14 (14.9%)
Chemo & Others	1 (1.1%)
Electro & Others	2 (2.1%)

Admission type	
First admission	26 (27.7%)
Planned readmission	35 (37.2%)
Unplanned readmission	33 (35.1%)
Number of times admitted to same ward	
1	45 (47.9%)
2-3	34 (36.2%)
4-5	4 (4.3%)
6-10	6 (6.4%)
>10	5 (5.3%)

Table 2. Socio-demographics of The Oncology Nurses (N = 25)

	N (%)
Sex	
Male	4 (16.0%)
Female	21 (84.0%)
Age (years)	
<30	10 (40.0%)
30-40	12 (48.0%)
41-50	3 (12.0%)
Education	
BSc Nursing only	17(68.0%)
BSc Nursing and Cert[a]	1 (4.0%)
BSc Nursing, Cert[a] and High Dip[b]	1 (4.0%)
Master of Nursing only	4 (16.0%)
Master of Nursing and Cert[a]	1 (4.0%)
High Diploma[b] only	1 (4.0%)
Working experience in nursing (years)	
<1	1 (4.0%)
1-2	2 (8.0%)
3-5	11 (44.0%)
>5	11 (44.0%)
Working experience in Oncology (years)	
<1	3 (12.0%)
1-2	7 (28.0%)
3-5	4 (16.0%)
>5	11 (44.0%)
Working in the oncology ward (years)	
<1	3 (12.0%)
1-2	7 (28.0%)
3-5	4 (16.0%)
>5	11 (44.0%)

[a]Certificate in Palliative / Oncology Nursing
[b]High Diploma in Nursing

Table 3. Relationships of Cancer Status and Hospital Admission with Satisfaction of Nurse-patient Communication after Admission, AOM and Wound Dressing Procedures Using Kruskal-Wallis Test (N=105 procedures)

	Satisfaction of nurse-patient communication			
	N	Mean Rank	X^2	P
Types of Cancer				
Lung	34	42.68	13.74	.056
Nasopharynx	8	61.50		
Colorectal	18	60.72		
Small intestine /Stomach	12	56.83		
Liver / Bile duct	4	61.50		
Cervical / Ovary	11	65.95		
Breast	8	61.50		
Others	10	36.95		
Cancer Recurrence				
First time	89	53.04	.23	.629
Recurrence	15	49.27		
Stages of Cancer				
2	7	44.79	10.71	.005
3	22	59.93		
4	61	40.38		
Types of Admission				
First admission	28	57.64	4.51	.105
Planned readmission	41	56.95		
Unplanned readmission	36	44.89		
Nos. of Times Admitted to Same Ward				
1	46	52.76	8.56	.073
2-3	41	52.27		
4-5	4	61.50		
6-10	9	37.39		
>10	5	82.50		
Received Cancer Treatment				
No treatment	14	43.50	1.82	.177
Received treatment	91	54.46		
Received Surgery				
No	102	52.13	3.36	.067
Yes	3	82.50		
Received Chemotherapy				
No	47	51.36	.29	.593
Yes	58	54.33		
Received Electrotherapy				
No	75	55.49	2.03	.155
Yes	30	46.78		
Received Other treatment(s)				
No	85	51.45	1.34	.246
Yes	20	59.60		
Types of Routine Care				
Admission	8	77.25	7.19	.027
AOM	89	50.21		
Wound dressing	8	59.75		
Order of care procedure				
First care	84	54.29	.88	.350
Second care	21	47.83		

Table 4. Physical and Psychosocial Concern Levels Before Routine Cares of Admission, AOM and Wound Dressing

	Concern levels			Top 5 with the highest concern levels
Physical Concerns	Nos. of patient concerned (*n*)	Mean	SD	
Disease	10	7.70	2.214	2nd Physical
Disease treatment	21	6.90	2.10	4th Physical
Symptoms:				
Pain	30	7.00	2.319	3rd Physical
Weakness	11	6.09	1.973	
Shortness of breath	5	6.00	1.871	
Poor appetite	13	5.85	1.994	
Weight loss	18	6.17	2.706	
Weight gain	0	/	/	
Nausea & Vomiting	12	6.42	1.929	5th Physical
Diarrhea & Constipation	7	5.57	1.902	
Pressure sore	0	/	/	
Sweating	2	3.50	2.121	
Fever	13	6.15	2.672	
Infection	3	8.00	0	1st Physical
Dizziness	5	5.60	1.342	
Others	26	5.81	2.48	
Psycho-social Concerns				
Emotion of families	15	6.33	1.799	
Roles of families	15	5.73	2.374	
Emotion management	2	2.50	2.121	
Professional support received	1	5.00	/	
Professional support needed in future	4	9.75	.500	1st Psycho-social
Impact of disease & treatment on:				
Future	10	7.70	1.636	3rd Psycho –social
Attention	0	/	/	
Social life	2	7.50	.707	5th Psycho-social
Appearance	2	8.00	0	2nd Psycho-social
Self-care	11	7.55	2.770	4th Psycho-social
Daily housework	3	4.00	2.646	
Job	5	7.00	2.121	
Finance	18	7.44	2.332	
Relationship with spouse	0	/	/	
Other concerns	5	7.00	1.871	

Table 5. Number of Non-verbal Cues Used in Routine Cares of Admission, AOM and Wound Dressing (N = 110)

	N (%)
Nurses	
Visual contact	81 (80.2%)
Physical contact	3 (3.0%)
Smiling	8 (7.9%)
Laughing	17 (16.8%)
Sharing	17 (16.8%)
Brief contact	15 (14.9%)
Proximity	76 (75.2%)
Modelling	4 (4.0%)
Ignoring	1 (1.0%)
Patients	
Visual contact	83 (82.2%)
Physical contact	0
Smiling	17 (16.8%)
Laughing	10 (9.9%)
Acceptance nod	28 (27.7%)
Instruction following	25 (24.8%)
Request	18 (17.8%)
Praise	29 (28.7%)
Maintaining attention	64 (63.4%)
Ignoring	1 (1.0%)
Disagreement	1 (1.0%)
Disgust	1 (1.0%)

Table 6. Relationships of Nurses' Characteristics and Their Use of Non-verbal Cues During Routine Cares of Admission, AOM, Wound Dressing and Discharge Procedure Using Chi-square Tests

	Visual Contact			Physical Contact			Smiling			Laughing		
	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2
Nurse Sex												
Male	18 (20.7%)	4 (19.0%)	.028	1 (33.3%)	21 (20.0%)	.320	0 (0%)	22 (22.0%)	2.210	1 (5.9%)	21 (23.1%)	2.611
Female	69 (79.3%)	17 (81.0%)		2 (66.7%)	84 (80.0%)		8 (100%)	78 (78.0%)		16 (94.1%)	70 (76.9%)	
Nurse Age												
<30yr	39 (44.8%)	8 (38.1%)	1.120	1 (33.3%)	46 (43.8%)	.130	1 (12.5%)	45 (46.0%)	3.382	8 (47.1%)	39 (42.9%)	.516
30-40yr[a]	35 (40.2%)	11 (52.4%)		2 (66.7%)	59 (56.2%)		7 (87.5%)	54 (54.0%)		6 (35.3%)	40 (44.0%)	
41-50yr	13 (14.9%)	2 (9.5%)								3 (17.6%)	12 (13.2%)	
Nurse Education												
Degree only[b]	75 (89.3%)	20 (95.2%)	.691	3 (100%)	92 (90.2%)	.325	3 (42.9%)	92 (93.9%)	19.737**	14 (87.5%)	81 (91.0%)	.194
Degree plus Cert[b]	9 (10.7%)	1 (4.8%)		0 (0%)	10 (9.8%)		4 (57.1%)	6 (6.1%)		2 (12.5%)	8 (9.0%)	
Nurse Religion												
No	65 (74.7%)	15 (71.4%)	.095	2 (66.7%)	78 (74.3%)	.088	4 (50.0%)	76 (46.0%)	2.607	14 (82.4%)	66 (72.5%)	.720
Yes	22 (25.3%)	6 (28.6%)		1 (33.3%)	27 (25.7%)		4 (50.0%)	24 (24.0%)		3 (17.6%)	25 (27.5%)	
Experience in oncology ward												
(yrs) <1 – 5yr	51 (58.6%)	9 (42.9%)	1.702	1 (33.3%)	59 (56.2%)	.617	2 (25.0%)	58 (58.0%)	3.267	10 (58.8%)	50 (54.9%)	.087
>5yr	36 (41.4%)	12 (57.1%)		2 (66.7%)	46 (43.8%)		6 (75.0%)	42 (42.0%)		7 (41.2%)	41 (45.1%)	
	Sharing			Brief Contact			Proximity			Modelling		
	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2	Yes n (%)	No n (%)	X^2
Nurse Sex												
Male	8 (44.4%)	14 (15.6%)	7.718*	1 (6.7%)	21 (22.6%)	2.017	20 (24.1%)	2 (8.0%)	3.069	0 (0%)	22 (21.2%)	1.063
Female	10 (55.6%)	76 (84.4%)		14 (93.3%)	72 (77.4%)		63 (75.9%)	23 (92.0%)		4 (100%)	82 (78.8%)	
Nurse Age												
<30yr	5 (27.8%)	42 (46.7%)	2.588	6 (40.0%)	41 (44.1%)	.545	37 (44.6%)	10 (40.0%)	.212	2 (50.0%)	45 (43.3%)	.071
30-40yr[a]	9 (50.0%)	37 (41.1%)		6 (40.0%)	40 (43.0%)		35 (42.2%)	11 (44.0%)		2 (50.0%)	59 (56.7%)	
41-50yr	4 (22.2%)	11 (12.2%)		3 (20.0%)	12 (12.9%)		11 (13.3%)	4 (16.0%)				

Nurse Education												
Degree only[b]	15 (83.3%)	80 (92.0%)	1.286	15 (100%)	80 (88.9%)	1.842	72 (88.9%)	23 (95.8%)	1.036	3 (75.0%)	92 (91.1%)	1.156
Degree plus Cert[b]	3 (16.7%)	7 (8.0%)		0 (0%)	10 (11.1%)		9 (11.1%)	1 (4.2%)		1 (25.0%)	9 (8.9%)	
Nurse Religion												
No	10 (55.6%)	70 (77.8%)	3.857	10 (66.7%)	70 (75.3%)	.498	63 (75.9%)	17 (68.0%)	.625	3 (75.0%)	77 (74.0%)	.002
Yes	8 (44.4%)	20 (22.2%)		5 (33.3%)	23 (24.7%)		20 (24.1%)	8 (32.0%)		1 (25.0%)	27 (26.0%)	
Experiences in this oncology ward (years)												
<1 – 5yr	7 (38.9%)	53 (58.9%)	2.430	9 (60.0%)	51 (54.8%)	.139	46 (55.4%)	14 (56.0%)	.003	2 (50.0%)	58 (55.8%)	.052
>5yr	11 (61.1%)	37 (41.1%)		6 (40.0%)	42 (45.2%)		37 (44.6%)	11 (44.0%)		2 (50.0%)	46 (44.2%)	

*P<.05; **P<.01;

[a] 30-50yr was used in analyzing physical contact, smiling and modelling non-verbal cues

[b] Degree includes a bachelor or a master degree in nursing; Certificate includes a palliative or an oncology nursing certificate

Table 7. Potential Factors Determined Patients' Satisfaction of Nurse-patient Communication Using Linear Rank Regression

	Satisfaction of nurse-patient communication		Rank Satisfaction of nurse-patient communication	
	Kruskal-Wallis Tests			
	Mean Rank	X^2	Beta (95%CI)	P
Sex				
Male	47.83	3.57	-.10 (-16.96 – 6.67)	.388
Female	58.27		Reference	
Stages of cancer				
2	44.79	10.71**	.02 (-20.36 – 24.41)	.858
3	59.93		.30 (6.27 – 30.88)	.004
4	40.38		Reference	
Types of routine care				
Admission	77.25	7.19*	.31 (1.70 – 59.35)	.038
AOM	50.21		.04 (-19.99 – 26.02)	.795
Wound dressing	59.75		Reference	
	Spearman Correlations r			
Age	.10		.21 (-.001 – 1.06)	.050
Psychosocial concern levels prior to communication	-.20*		-.03 (-1.17 – 1.00)	.877
Overall concern levels prior to communication	-.21*		-.09 (-1.97 – 1.63)	.890
Overall concern levels after communication	-.22*		.32(-1.36 – 2.22)	.637
Cancer disease concern levels after communication	-.25*		-.20 (-6.97 – .76)	.113
Future professional support needed concern levels after communication	-.21*		-.09 (-4.79 – 1.89)	.389
Self-care concern levels after communication	-.19*		-.29 (-5.96 – -.13)	.041

*P<.05; **P<.01